

Fashion Redefined with Virtual Grooming and Shopping Assistant

1 INTRODUCTION

1.1 overview

In this modern era , everybody wants to be dressed up in a way that reflects 'Swag' . Evidently, your nature descides who you are, not your clothes . But at the same time there is no loss in raising your fashion standard. At the present time ,celebrities are setting trend,for example Megan Fox has a fantastic dressing sense, which is more than enough to make the hearts of her fans skip a beat believe it or not , girls are always more concerned about their attire as compared to boys this could be prime reason why girls take extra hours while shopping . With time, millennial shoppers consider e-commerce platforms a perfect place to buy clothes due to more varity, However, online shopping isn't as easy as it sounds. Usually , customers are confronted by issues related to size,availability etc. To overcome such problems the fashion industry is using applications if artificial intelligence Because of AI nowadys people are enjoying an amzing shopping experience.

1.2 Purpose

Now going online and finding the same pair of shoes could be time consuming as you might not know the exact brand of the shoes or its exact category. It is not easy to describe product based features like shape and texture. Another instance could be specifying featured-based products like T-shirt with a particular pattern or logo. Hence, a capability is needed which will allow you to take a picture of an item and recommends you that same or similar items from various e-commerce web sites.

2. LITERATURE SURVEY

2.1 Existing problem

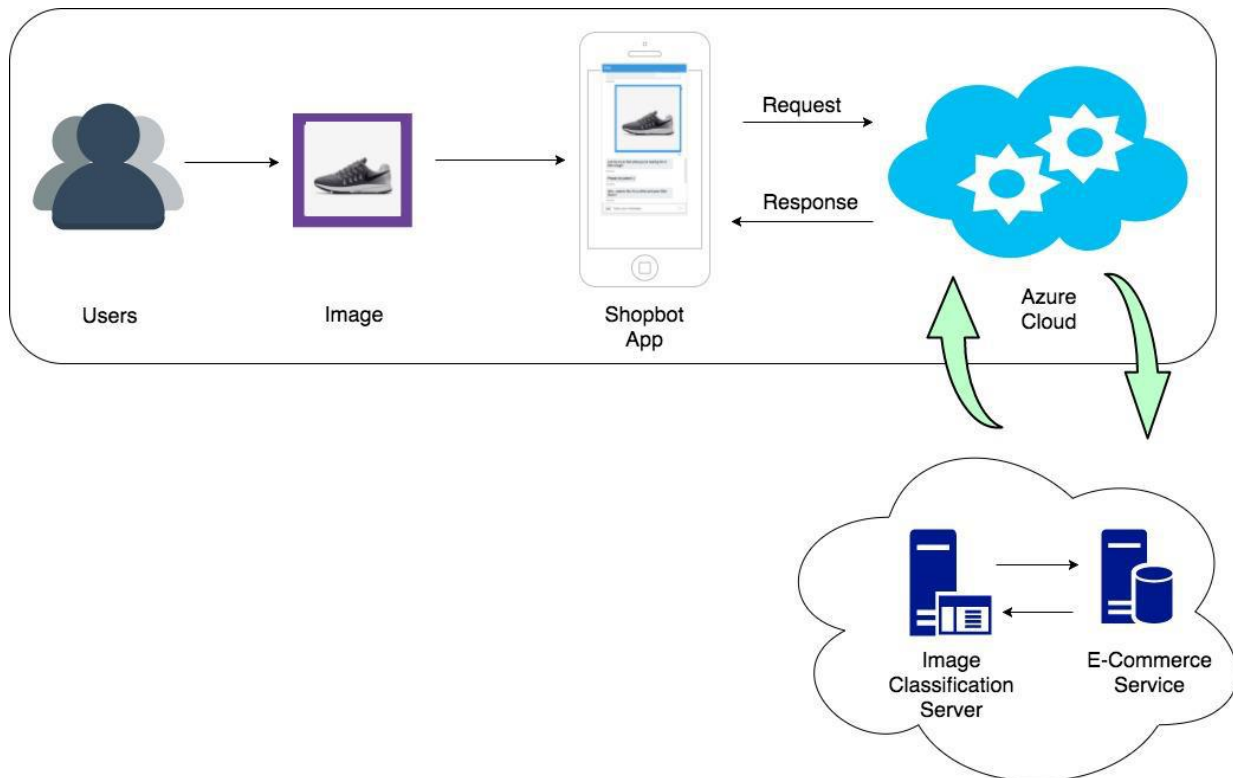
Nowadays, intelligent agents are the trend when it comes to online shopping. These agents or chatbots are often used as customer service applications in order to reduce the waiting time for users by answering frequently asked questions. In online shopping, product search is a key component [1]. When a user is online to buy a particular product, in most of the cases, he finds it by entering product related information on search engines like Amazon or eBay. Based on the input provided, a list of similar products is recommended to the user. If the user is not sure of the product information or he has just seen something which he wants to buy, searching for that item online following the traditional way could be tedious. These search engines allow users to search based on a criterion like keywords, categories, etc. However, they do not provide any search functionality based on images. For instance, suppose you see someone wearing a pair of Nike shoes which you like a lot. Now going online and finding the same pair of shoes could be time consuming as you might not know the exact brand of the shoes or its exact category. It is not easy to describe product based features like shape and texture.

2.2 Proposed Solution

The solution is to build a chatbot based Image Search & Recommendation system. We need to build an intelligent assistant that works with image recognition along with natural language processing (NLP). This system captures the image and extracts all the information related to different objects and use that information to retrieve and recommend products from ecommerce websites

3.THEORATICAL ANALYSIS

3.1 Block Diagram



3.2 Hardware / Software designing

- **hardawre requirement :** CPU with RAM of 16 GB and Nvidia GT graphics card, is used for development.
- **software requirement :** watson assistant, watson studio, jupyter notebook, anaconda and spyder

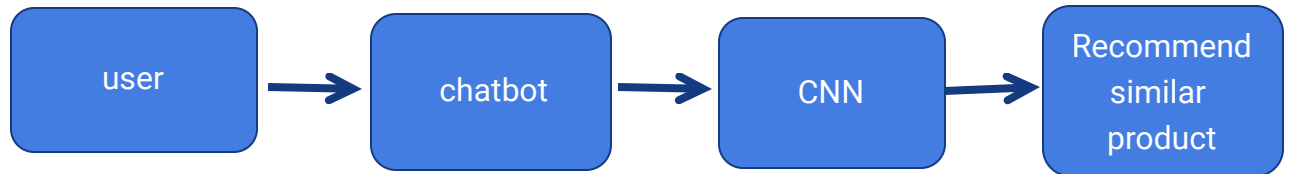
4 .Experimental analysis

In previous section, we discussed about the architecture of our Shopping bot and its underlying implementation steps. In this section, we will summarize the results of our experiments that we performed to develop the image recognition and product retrieval services. Like I explained during the implementation phase how I carried out various experiments with existing machine learning models for building the image recognition service. Most of the models gave very generic results in terms of finding the image features. The image used for experiments is shown in fig. 11 and the results are shown below in Table 1.

Image Recognition API	Average Confidence Score	Result	Machine Learning Models with Retraining Ability
Microsoft Vision API	49.6%	a pair of shoes	No
Google Cloud Vision API	91.4%	footwear, shoes, white, red, pink	No
Amazon Recognition	96.3%	footwear, shoes	No
CloudSight API	97.95%	sneakers, shoes, red, white	Yes

We got very similar results using all the above image recognition services. Each API gave us generic results in terms of image classification, for example, footwear, shoes, red, white, etc. These results were not specific enough to be considered for our image recognition use case. However, there was one difference among these services i.e., CloudSight API which offers pre-trained machine learning models with existing capabilities which can be trained again on any domainspecific dataset. Due to this special feature, we decided to move forward with this image recognition service.

5. Flowchart



6 Result

In this research, we have tried to find out an answer to our research question of building a virtual shopping assistant using state of the art image recognition technologies to improve the overall online shopping experience for the users. We have proposed a novel approach of providing relevant product listings to the users based on visual search. The proposed application has three main components, i.e., chatbot based user interface, image recognition service and a product retrieval service. Each of these components is an important part of this application.

However, image recognition service is the core functionality of the application which enables users to extract meaningful information from the images which are hard to describe in words, for example, categories, brand name, color features of a product.

Be Each day Beautiful...

We have a wide range of products and services to cater to the varied requirements of customers. our fashion-bot **Trendy** is courteous and prompt at providing any assistance. She will readily answer any queries or questions that you may have. Pay for the product or service with ease by using any of the available modes of payment, such as Cash, Debit Cards, Cheques, American Express Card, Credit Card.

Happy Shopping!

Upload Image Here

Choose...



Result: women's wear



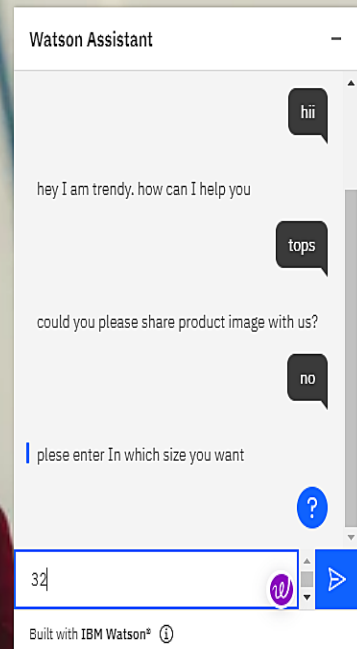
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Happy Shopping!

Upload Image Here

Choose...



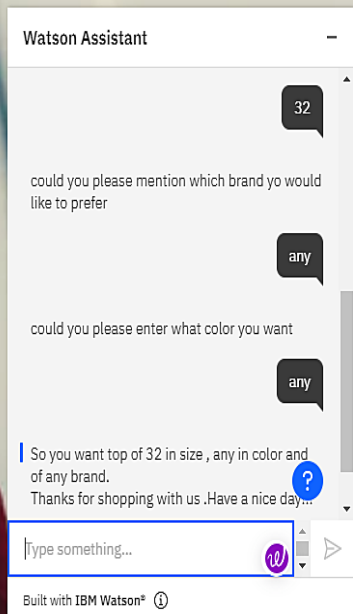
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Happy Shopping!

Upload Image Here

Choose...



7. Advantages and Disadvantages

While chatbots in retail are an excellent means of providing essential customer service in online commerce, they still have a lot to learn. Of course, with a chatbot, you can get through all the steps of viewing the available products, selecting the item, and making the purchase. Also, chatbots are very helpful in providing answers to frequently asked questions, such as the delivery conditions, the refund policy, the store locations, etc. However, when asked a question which does not fit into the programmed pattern, the chatbots tend to become confused and either lead you with more questions or suggest transferring your chat to a human assistant (and thumbs up to the brands who do engage assistants to monitor the chats and take over the conversation quickly). At the same time, the benefits of chatbots for the fashion retail industry are quite numerous:

- **Customer engagement**

Chatbots can provide valuable support to the brand by creating a positive customer experience, introducing first-time customers to the brand, offering not only the direct commercial service but also the brand-related entertainment, for example, backstage glimpses and latest fashion show highlights.

- **Cost-efficiency**

Implementing a chatbot to provide the basic consulting service can help the company to save costs, as maintaining a chatbot is more cost-efficient than employing a person to do the same work.

- **Increased conversion rate**

A chatbot which engages the customer from the first contact till checkout is likely to increase the conversion rate of the online store. When the user gets all the information and service in the same place and can complete the transaction without switching to another page, they are more inclined make purchase instead of taking their time to think and maybe come back later.

- **Market reach**

Building a chatbot on a globally existing messaging platform, such as Facebook Messenger or Slack, gives the retail brand an entirely new vast channel of reaching its regular and prospective customers. The brand presence and awareness can increase significantly. Nowadays, the role of technology in online commerce cannot be overestimated. Our everyday schedules are getting tighter, and more often than not we prefer to do our shopping without visiting physical stores. However, we may still miss the exquisite sensation of “being special” which we always feel in fashion stores. So, it is up to the retail brands to train their chatbots to bring the luxury shopping atmosphere directly to their customers’ home.

8. Applications

- **Social Media Integration:** To increase user engagement with this application, we would require to publish it on various social media sites like Facebook Messenger, Slack, Skype, etc. as real world users are the ones who would help improve this application by providing their valuable feedback.
- **E-commerce Inventories:** Having a standalone e-commerce inventory for retrieving relevant product items, confines users' purchasing options. For instance, if a user wants to CS 298: Project Report 56 buy a pair of jeans, he will be restricted to the options currently available on that inventory. They won't have the option to choose their favorite shopping portal. So, we would integrate support for various other shopping portals and not just one. This will certainly enhance the user shopping experience.
- **Multiple Object Recognition:** Based on the problem that we are trying to solve, having a multi-object recognition technology is inevitable. It is very unlikely that user would use an image showing only a single object to perform search.

9. Conclusion

In this research, we have tried to find out an answer to our research question: decisions get influenced by social media a lot. So, having a product search application to find relevant products by providing just an image is very empowering. Now, users have a better way of finding products perfect for them. They are no longer required to go to traditional text-based search platforms. Instead, they can allow this application to find relevant products for them. All they need to do is provide an image of the CS 298: Project Report 54 product they are looking for. While working on this project, we understood the importance of the dataset required to train the machine learning model in order to achieve results of greater accuracy and precision. After performing various experiments, we realized that having a good quality data with more granularity is far more important than having just a large dataset of low quality and down-sampled images, especially for

our use case where we are trying to classify shoes based on images. Building our own dataset with features like brand names and more granular shoes categories, have certainly helped us in achieving quality results and high performance. In product retrieval service, we have used only one e-commerce API i.e., Shopstyle to retrieve similar products. Although it provides satisfactory results, having more number of e-commerce inventories integrated within this service will surely increase the listings of relevant products and thus, its performance. For instance, a user can specify his/her favorite e-commerce portal to retrieve relevant products. The experiments carried out in this project manifest the power of Computer Vision and Machine Learning. The results show the benefits of having a Visual or Image based search application which will bridge the communication gap between humans and computers when it comes to finding relevant products online based users' real product intentions. We believe that this application is a good starting point in taking the user shopping experience to the next level altogether. We hope to continue refining this solution to make it more efficient and effective for users.

10. Scope

The scope of the project is to come up with a virtual shopping assistant having image recognition capabilities. Existing systems have only text and speech recognition capabilities for product search. However, they do not have image based search functionality. Hence, this project will focus on image recognition to offer users with a powerful and seamless search capability to search for various kinds of items on e-commerce websites using just images. As far as the current scope is concerned, we target Shopstyle as an e-commerce platform due to its availability since it is open source. Moving forward, we plan to integrate other e-commerce platforms like Amazon, eBay, etc

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• APPENDIX

```
import numpy as np
import os
from tensorflow.keras.models import load_model
from tensorflow.keras.preprocessing import image
from flask import Flask, request, render_template
from werkzeug.utils import secure_filename
from gevent.pywsgi import WSGIServer

app = Flask(__name__)
model = load_model("trendy.h5")

@app.route('/')
def index():
    return render_template('base.html')

@app.route('/predict', methods = ['GET', 'POST'])
def upload():
    if request.method == 'POST':
        f = request.files['image']
        print("current path")
        basepath = os.path.dirname(__file__)
        print("current path", basepath)
        filepath = os.path.join(basepath, 'uploads', f.filename)
        print("upload folder is ", filepath)
        f.save(filepath)

        img = image.load_img(filepath, target_size = (64,64))
        x = image.img_to_array(img)
        x = np.expand_dims(x, axis = 0)

        preds = model.predict(x)
        print("prediction", preds)
        index = ['jeans', 'men's wear', 'shoes', 'women's wear']
        preds = np.argmax(preds)
        res = str(index[preds])
        print(res)

        text = "The recommended cloths are : " + res
        return res

if __name__ == '__main__':
    app.run(debug = False, threaded = False, port=8000)
```

```

# -*- coding: utf-8 -*-
"""
Created on Wed Aug 18 17:54:55 2021

@author: afrin
"""

import json
from ibm_watson import AssistantV2
from ibm_cloud_sdk_core.authenticators import IAMAuthenticator

authenticator = IAMAuthenticator('0D07ewiZ_P2m-oP0eob6y_IVkWZTGUjGVFSj7n_GDUYy')
assistant = AssistantV2(
    version='2021-06-14',
    authenticator = authenticator
)

assistant.set_service_url('https://api.eu-gb.assistant.watson.cloud.ibm.com')
response = assistant.create_session(
    assistant_id='7f2c2119-ad5c-4679-8124-55b8162b6e12'
).get_result()
session_id = response
session_id = session_id["session_id"]
print(type(session_id))
print(session_id)

while True:
    input_text = input("enter the text")
    response = assistant.message(
        assistant_id='7f2c2119-ad5c-4679-8124-55b8162b6e12',
        session_id=session_id,
        input={
            'message_type': 'text',
            'text': input_text
        }
    ).get_result()
    print(response)
    print(response["output"][0]["generic"][0]["text"])

```